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On the Myology of the Limbs of the Kinkajou (*Cercoleptes caudivolvulus*) &c. By J. BESWICK-PERRIN.

I am indebted to Professor Flower for his kindness in allowing me the privilege of dissecting this interesting and beautiful animal, recently one of the inmates of the Society's Gardens.

To the description of the muscles of the Kinkajou I have added some remarks on the myology of the limbs of the *Paradoxurus typus* and Caracal (*Felis caracal*), more particularly mentioning the chief points of difference between them.

The *sterno-mastoid* consists of two portions, an anterior and external, and a posterior and internal.

The *former* is smaller than the latter. It arises from the apex of the manubrium sterni, being overlapped at its origin by the anterior fibres of the pectoralis anticus muscle; opposite the middle of the neck it divides into two nearly equal-sized slips; the outer of the two is inserted fascial into the occiput; the inner one joins the outer side of the deeper division to be inserted along with it into the mastoid process of the temporal bone. The posterior or internal portion is half as large again as the preceding; it arises from the summit of the manubrium along with its fellow of the opposite side. It is inserted with the inner division of the preceding into the mastoid process of the temporal bone. In the *Paradoxurus* the sterno-mastoid is a single muscle; it is inserted into both the mastoid of the temporal and the occipital bones. In the Dog it is a single muscle at its origin, bifurcating into two near its distal extremity, one to be inserted into the digastric groove, the other into the lateral part of the os occipitis (Douglas).

The *levator claviculæ* is a long, slender, and entirely muscular slip, which arises from the bottom of the digastric groove, external to the digastric muscle. It passes almost directly backwards towards the shoulder, to be inserted into the rudimentary clavicle, behind the levator humeri, with which it is closely associated. In the *Paradoxurus* it has the same arrangement, except that it is situated at its origin a little internal and posterior to the digastric muscle. The clavicle in this animal is represented simply by a tendinous intersection in the levator humeri.

In the Dog it is described by Douglas as the musculus ad levatorem accessorius.

The *levator scapulæ* arises from the anterior aspect of the broad, expanded, and wing-like transverse process of the atlas. It is inserted into the spine of the scapula near its anterior extremity. In the *Paradoxurus* the atloid attachment is not so decidedly in front of the transverse process, being more to its lower and outer border. At its insertion it is continuous with the anterior scapular fibres of insertion of the trapezius muscle. This muscle is the levator scapulæ major vel anterior of Douglas*.

The *levator scapulæ minor* is a detached segment of the levator anguli scapulæ. It arises from the lower border of the transverse process of the atlas, and is inserted into the dorsal extremity of the spine of the scapula. This muscle is wanting in the *Paradoxurus*. The slip which corresponds to it is blended with the levator anguli scapulæ. It presents the latter arrangement in the Dog.

The *occipito-scapular* occupies the rhomboid plane, and is very closely connected with the anterior border of the rhomboid muscle during its whole length. There is certainly a slight indication of an areolar interval; but the separation of this muscle from the rhomboid is arbitrary. In the *Paradoxurus* there is not the slightest trace of an areolar interval between the two. In the Kinkajou it arises from the occipital ridge external to the protuberance. The rhomboid is a continuation from the posterior border of this muscle downwards as far as the fourth dorsal spine. The occipito-scapular is inserted into the superior angle of the scapula, close to the base of the spine, and slightly in advance of the rhomboid muscle. The rhomboid extends from the preceding to the posterior inferior angle of the scapula. In the *Paradoxurus* the rhomboid does not extend along the neck beyond a point corresponding to the middle of its entire length.

The *omo-hyoid* arises from the superior angle of the scapula, lying between the supraspinatus and the subscapularis. It is inserted into the hyoid bone. In the *Paradoxurus* and Dog it is wanting.

The *levator humeri proprius* arises fleshy from the masto-occipital ridge and the posterior cervical raphe as low down as the second cervical vertebra. The origin of this muscle is inseparably connected with the trapezius at its lower part. It is inserted into the delto-pectoral tubercle, where it blends with the lower fibres of insertion of the anterior pectoral muscle. The trapezius presents a remarkable arrangement, the muscles of the two sides being directly continuous by means of a thin aponeurotic expansion across the dorsal mesial line, having no spinal attachments. The object of this arrangement is no doubt to facilitate the rapid approximation of the scapulæ, *e.g.* when the animal tears its prey.

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* Myographia Comparata.

This muscle is inserted into the anterior three-fourths of the scapular spine.

Besides there is an additional portion segmented from the preceding, which arises from the spines of the dorsal vertebræ from the second to the tenth inclusive. It crosses the inferior half of the vertebral border of the scapula and the adjacent portion of the infraspinatus, to be inserted into the lower and posterior half of the spine of the scapula.

The *serratus magnus* and *levator anguli scapulæ* constitute one large and continuous muscle. It arises, by fourteen digitations, from the transverse processes of the six lower cervical vertebræ, and from the nine upper ribs. The digitations are arranged in a radiate manner, advancing towards the middle line from the first to the sixth ribs, and then recedes to the ninth. Those attached to the six upper ribs extend as far as the anterior extremities of the vertebral ribs, springing from their upper margins; the three succeeding digitations do not advance so far forwards, and fit into corresponding processes from the external oblique muscle of the abdomen. Between the digitations attached to the second and third and third and fourth ribs pass the two superior muscular slips of insertion of the scalenus posticus.

The insertion of the serratus magnus does not present that twisted appearance common to the Primates; but it is simply flattened and extends the whole length of the vertebral border of the scapula.

In the *Paradoxurus* there is a similar arrangement, except that the levator anguli scapulæ representative is attached to all the cervical transverse processes; the upper and anterior one, no doubt, representing that which I have described in the Kinkajou as the levator scapulæ minor.

The *pectoral muscles* are three in number, viz. an anterior, a posterior superior, and a posterior inferior.

The *anterior* of these three pectoral muscles corresponds to the pectoralis major. It is elongated and irregularly quadrilateral in shape, and entirely muscular. It is attached proximally to the anterior half of the sternum and to the sternal extremities of the second to the seventh ribs inclusive. The most anterior fibres overlap, and are closely associated with the fibres of origin of the sternomastoid muscle. It is attached by its distal fibres to the upper half of the anterior border of the shaft of the humerus, extending from the great tuberosity to the distal end of the delto-pectoral ridge. It is partly blended with the fibres of insertion of the levator humeri.

The *posterior superior muscle* is situated behind the preceding. It is attached to the second, third, fourth, fifth, sixth, and seventh ribs close to the sternum, and also to the adjoining margin of the sternum. The muscular fibres converge as they pass outwards, finally terminating in a fascial expansion on the tuberosity of the humerus, into which it is implanted. It also sends off a fascial process which blends partly with the capsular ligament of the shoulder-joint, reaching as far upwards and forwards as the rudimentary coracoid process. This muscle closely accords with the second pectoral of birds in attaining to the position of an elevator humeri.

The *posterior inferior muscle* arises from the seventh, eighth, ninth, and tenth ribs, from the lower third of the mesosternum, and slightly from the xiphisternum. Its upper part is overlapped by the preceding muscles, while its lower portion appears on the same plane as the anterior pectoral. Its fibres are directed obliquely forwards and outwards, to be inserted into the middle of the inner margin of the delto-pectoral ridge. This muscle is joined at its insertion by a very large *Achselbogen* from the latissimus dorsi.

In the *Paradoxurus typus* and Caracal there is a similar arrangement of the pectoral muscles, except that the posterior inferior portion in the latter animal has a much more extended attachment to the radial border of the humerus by means of an aponeurotic tendon.

The *epigastric* muscle consists of two or three isolated bands of the panniculus carnosus, which spring from the antero-lateral aspect of the thoracic subtegumental fascia; these unite together at their anterior and outer extremity, forming a moderately strong muscle, which passes through the axillary cavity, joining the upper border of the Achselbogen close to its insertion into the humerus.

The *epicostalis* arises from the third, fourth, and fifth ribs, close to the sternum. It passes in a direction obliquely upwards, forwards, and outwards, crossing superficial to the rectus abdominis muscle (which is prolonged as far forwards as the second and first ribs). It is inserted into the first rib directly in front of the outer half of the preceding muscle. This muscle has a similar arrangement in the *Paradoxurus typus* and Caracal.

The *subscapularis* in neither of these animals presented any notable peculiarities.

The *latissimus dorsi, teres major,* and the *dorso-lateral panniculus* constitute by their intimate distal association one large, extensive, and complex muscle. The latissimus dorsi occupies a central position between the three. The proximal attachments have the same disposition which is common to the majority of the higher animals. Distally, the latissimus dorsi divides into three portions—a superior, mesial, and inferior.

The *superior* constitutes the Achselbogen of the German authors. It is inserted into the delto-pectoral ridge behind the pectoral muscles, as already mentioned. This muscle crosses in front of the axillary vessels and nerves (exactly as it does in the human subject when present), and is joined prior to its insertion by a contributory slip from the dorsal panniculus.

The *mesial* portion blends with the teres major, the two being inserted together into a depression internal to the delto-pectoral ridge.

The *inferior* portion is given off in conjunction with the preceding. It passes down the inner and posterior aspect of the arm as a strong wedge-shaped muscle, and is finally inserted into the anterior and inner border of the olecranon and fascia of the forearm. It receives about its middle a large slip from the dorsal portion of the panniculus. The latter muscle is also intimately associated with the teres major.

The *Paradoxurus typus* and Dog have a similar arrangement. In the Caracal the dorsal panniculus is not so differentiated as in the preceding, and the Achselbogen is wanting.

The *triceps* is large and exceedingly well-developed; the only point of note is that the representative of the anconeus is not segmented from the inner factor of the triceps, though in other respects disposed in the usual manner.

The *anconeus epitrochlearis* is small in the Kinkajou and in the *Paradoxurus typus*; but in the Caracal it is larger and more elongated. It arises in the latter from the ridge above the internal humeral condyle in front of the epicondyloid foramen. It is only partly inserted into the anconeal process, the remainder of its fibres being continuous with the flexor carpi ulnaris. This muscle, in combination with the flexor carpi ulnaris, simulates on the inner side of the humerus the supinator longus on the outside.

The *deltoid* consists of the two factors the mesodeltoid and postdeltoid, separated by an areolar interval. They present no remarkable features worthy of description.

The *supraspinatus* and *infraspinatus* have the usual arrangement.

The *teres minor* is represented by an unsegmented portion of the infraspinatus.

The *biceps* arises by two heads—one the analogue of the so-called long head of human anatomy, and the other the short head. Both arise in conjunction from the base of the coracoid tubercle. The long head is very large; it passes through the capsular ligament of the shoulder-joint, grooving the humerus. The short head consists of a narrow elongated tendon, which occupies almost half of the entire length of the muscle; it runs parallel with the long factor (after the latter has emerged from the bicipital canal) for some distance, then, passing in front of it, terminates at its distal extremity by blending with the anterior fibres of the long head. It is inserted into the radial tubercle. The short factor of the biceps gives origin to two varieties of the coraco-brachialis, viz. the short and the long. The coraco-brachialis brevis is an inverted-wedge-shaped muscle; it is inserted into the inner border of the neck of the humerus immediately above and extending somewhat behind the tendon of insertion of the teres major. The coraco-brachialis longus is a slender, elongated, wedge-shaped muscle; it arises from the tendon of the short head of the biceps, about half an inch below the preceding. The muscular fibres gradually taper into a tendon which occupies half the length of the entire muscle. It is inserted into the inner border of the humerus, immediately above the epicondyloid foramen.

This is a remarkable example of the coexistence of the long and short varieties of the coraco-brachialis of Wood. The latter accurate observer has placed on record several similar examples occurring in the human subject. I have also found several similar specimens;

but in no instance have they exhibited so complete and isolated a character as in the Kinkajou.

In the Caracal, *Paradoxurus,* and Dog the short variety of the coraco-brachialis only is represented, the long variety being absent. In the three latter animals the so-called biceps is a monogastric muscle, the long head alone being present. In this respect the Kinkajou presents a remarkable difference from the Dog, the Caracal, and the *Paradoxurus typus,* exhibiting a much higher grade of muscular development, and approximating more closely to the Primates. As regards the insertion of the biceps in the Dog, it is not always confined to the radius. I found it inserted into both the radius and ulna in a mongrel specimen.

Brachialis anticus. This muscle is very large and fleshy. It arises from the delto-pectoral ridge and upper half of the shaft of the humerus below this ridge. It is inserted into the coronoid process of the ulna. It has a similar arrangement in the Caracal and *Paradoxurus typus.* In the Dog the brachialis anticus is sometimes represented by an exceedingly small muscle which arises from the anterior surface of the lower end of the shaft of the humerus, instead of the more extensive attachment usually ascribed to it.

The *pronator radii teres* is a monogastric muscle. It arises from the inner humeral condyle below the epicondyloid foramen. It is inserted into a rough impression on the outer surface of the shaft of the radius, and into the bone for some distance below this point. It has a more extensive radial attachment in the *Paradoxurus.*

Palmaris longus externus arises by a pointed tendinous process from the internal humeral condyle, and from the septum between it and the adjacent muscles. It is inserted into the anterior annular ligament and palmar fascia; the latter is very thin, but disposed as in the human subject.

Palmaris longus internus is a fusiform muscle. It arises from the fascia covering the flexor carpi ulnaris, by a pointed tendinous process, about three quarters of an inch below the internal humeral condyle. It is inserted into the anterior annular ligament close to the pisiform bone; it is also partly continuous into the flexor brevis minimi digiti. This muscle may be regarded as a differentiated portion of the flexor carpi ulnaris; it is entirely supplied by the ulnar nerve. In the Caracal and *Paradoxurus* there is only the usual palmaris longus.

The *flexor carpi radialis* and *flexor carpi ulnaris* are like the corresponding muscles in the human subject. The ulnar nerve and the recurrent ulnar artery pass between the two heads of the latter muscle.

The *flexor sublimis digitorum* arises musculo-tendinous from the internal humeral condyle, coronoid process, and their connecting ligament. About half an inch below its origin it divides into a central and two flanking muscles. The two latter terminate in short tendons, which are inserted into the front and lateral aspects (one on each side) of the flexor profundus digitorum tendon, opposite the wrist-joint. The mesial portion divides into four tendons: three of these are superficial; but the fourth occupies the posterior aspect of the muscle, and terminates in the profundus tendon opposite the same point, and situated between the tendons of insertion of the forementioned flanking muscles. The three superficial tendons pass beneath the anterior annular ligament, traverse the palmar aspect of the fore foot, and form the perforated tendons of the second, third, and fourth digits. The perforatus tendon of the fifth digit is formed by the flexor brevis minimi digiti, to be presently described. In the *Paradoxurus* there are two flanking slips only. The flexor minimi digiti longus gives an additional slip to the fourth digit, joining the flexor-perforatus tendon opposite the first phalanx.

The *flexor profundus digitorum* has the same origin as the flexor pollicis longus and profundus digitorum of the human subject combined. Immediately above the radio-ulnar carpal articulation this large and fleshy muscle terminates in a strong and flattened tendon, which divides, opposite the middle of the metacarpal shafts, into five tendons,—one, the smallest, to the pollex; the remainder to the respective digits, perforating the superficial flexor tendons. This muscle has associated with it four lumbricals, which are disposed as in the human subject. There is no representative of the coronoid origin of the flexor longus pollicis, so common in the human subject.

The *flexor minimi digiti longus*. This peculiar muscle arises from the pisiform bone and from the tendon of the palmaris longus internus. Its muscular belly is wedge-shaped, and terminates in a long, slender tendon, which splits to allow the perforans tendon of the fifth digit to pass to the terminal phalanx. It is inserted into the sides of the base of the second phalanx of the fifth digit. I have found the homologue of this muscle several times in the human subject; in one specimen it was especially remarkable, arising by two distinct heads—one from an aborted and entirely tendinous representative of an additional palmaris longus, the other from the tendon of the flexor carpi ulnaris. These two heads united together immediately above the wrist-joint to form one well-developed muscle, which finally joined to be inserted with the abductor minimi digiti. Professor Wood has recorded several similar specimens* under the name of abductor minimi digiti. This muscle is not, however, an abductor, but decidedly a flexor of the little digit, and finds its homologue in the perforatus flexor of the fifth digit in the Carnivores.

The *abdactor minimi digiti* arises from the pisiform bone. It is inserted into the base of the first phalanx and the inner sesamoid bone opposite the metacarpo-phalangeal articulation.

The *flexor brevis minimi digiti brevis* arises also from the pisiform bone and tendon of the flexor carpi ulnaris. It is inserted into the base of the first phalanx on its ulnar side, and into the sesamoid bone. Besides these muscles there is another one, which corresponds in position and attachment to the opponens. It arises tendinous from the unciform bone and from the tendon of the flexor carpi ulnaris, prolonged from the pisiform to the fourth metacarpal base; As it passes along the metacarpal bone it divides into two portions. They are inserted into their respective sesamoid bones at the base of the first phalanx of the fifth digit. There is a small sesamoid bone developed in the tendon of origin of the latter muscle.

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* "Variations in Human Myology," Royal Society's Proceedings, June 1868.

The muscles of the pollex are three in number:—

1. *Abductor pollicis,* which takes its origin from the radial sesamoid bone and the os trapezium. It is inserted into the radial side of the base of the first phalanx and its sesamoid bone.

2. The *opponens pollicis* arises from the trapezium. It is inserted into the distal part of the pollex metacarpal, and into the sesamoid bone on the radial side of the metacarpo-phalangeal articulation.

3. *Flexor brevis pollicis* consists of two portions: one arises from the trapezium, and is inserted into the sesamoid bone and base of first phalanx; the other arises from the trapezoid and os magnum, and is inserted into the ulnar side of the base of the pollex proximal phalanx without impinging on the sesamoid bone.

The *pronator quadratus* occupies almost the entire length between the two bones of the forearm.

The *interossei of the fore foot.* There are only two superficial palmar interossei. They arise together by a thin flat tendon from the os magnum. Directly after their origin they diverge from each other: the one on the radial side terminates at the base of the first phalanx of the second digit on its ulnar side; the other (or ulnar side one) goes to the radial side of the base of the first phalanx of the fifth digit: the first abducts the index digit from the pollex; the second adducts the fifth digit in the direction of the pollex. In the words of human myologists, both adduct towards a line drawn down the centre of either the third or fourth digit. The deep interossei are six in number: the first arises from the pollex and index metacarpal bases and shafts, the second and third from the interval between the second and third metacarpals; the fourth and fifth between the third and fourth, and the sixth between the fourth and fifth metacarpals. They are inserted as follows:—Each of the second, third, and fourth digits receives one on each side. There are two sesamoid bones in connexion with each metacarpo-phalangeal articulation; and these muscles are connected respectively with each of them, and thus prolonged to the sides and bases of the proximal phalanges.

The first, third, and fifth adduct the second, third, and fourth digits towards the pollex; the second, fourth, and sixth abduct them from the pollex. These muscles can scarcely be called interossei; they are situated in a great measure upon the metacarpals rather than between them. The superficial ones are altogether removed from contact with the metacarpals. A good name for the deep layer would be "bilateral flexors." Any two of these muscles acting conjointly would produce direct flexion of the first phalanx on to the metacarpal. This is probably their true use in the living subject.

The Extensors of the Fore Limb.

The *supinator longus,* the *extensor carpi radialis longior* and *brevior* are exactly the same as in the human subject. In the

Paradoxurus and Caracal the two latter muscles are blended together; the common tendon resulting from the combined muscle divides behind the extensor ossis metacarpi pollicis into two, to be inserted into the radial sides of the second and third metacarpals.

The Kinkajou has these muscles much better developed and more perfect than the *Paradoxurus* and Caracal, and more in accordance with that condition which is called the average one in the human subject. This is not exactly true, however; for while the Kinkajou's muscles illustrate a decided advance above that of the Caracal, *Paradoxurus*, Dog, and Cat, and simulates the corresponding muscles in the Primates, still the human subject leads, and exhibits in the complexity of arrangement occasionally found in these muscles a tendency towards a further grade of muscular development which is minus a homologue in any other living animal. Douglas, in his 'Myographia Comparata,' states that the supinator longus is wanting in the Dog: I can scarcely say that it is wanting; it is aborted; its muscular belly is decidedly present and joined with the extensor carpi radialis communis. In several specimens which I have carefully examined, I have detected indications of segmentation of the supinator longus from its companion muscle. This was especially marked in a thoroughbred Spaniel which I had the pleasure of dissecting during last winter.

The *extensores communis digitorum* and *carpi ulnaris* and the *supinator brevis* present the usual arrangement.

The *extensor minimi digiti* divides into three tendons, to be distributed to the third, fourth, and fifth toes, joining the tendons of the common extensor on their ulnar sides.

The *extensor ossis metacarpi pollicis* is a large fleshy muscle; it is inserted into the trapezium and pollex metacarpal base.

The *extensor indicis* divides into two tendons: the radial one is distributed to the pollex, and constitutes its only phalangeal extensor; the ulnar one joins the ulnar side of the common extensor tendon to the second digit, to be inserted along with it.

Muscles of the Hind Limb.

The *psoas parvus* arises fleshy from the front and sides of the three upper lumbar vertebræ, and from the disks between the first and second, and second and third. The tendon of insertion is broad and flat, and commences on the superficial aspect of the upper part of the muscle, the muscular fibres being prolonged upon the under surface of the tendon for nearly half its length. It is inserted into the ilio-pectineal eminence and brim of pelvis immediately posterior to the origin of the pectineus. It lies superficial to the quadratus lumborum and psoas magnus, simply separated from the latter by areolar tissue.

The *ilio-psoas.* The psoas magnus arises from the front and sides of the bodies of the three lower lumbar vertebræ and their disks by fleshy fibres, and from the sacral surface and the posterior half of the pubic border of the ilium, where it becomes continuous with the iliacus. The latter arises from the iliac surface of the bone as a small and entirely fleshy muscle; it joins the preceding. The conjoined muscle is inserted by a very short and strong tendon into the lesser trochanter of the femur.

The *sartorius* arises from the upper third of the acetabular border of the ilium. It is inserted into the inner side of the patella, and into the shaft of the tibia immediately below the tuberosity. The tendinous expansion at the knee-joint is united to the ligamentum patellæ, and, stretching across the antero-lateral aspect of the joint, forms a protective covering to it.

The *gracilis*, three *adductores*, and *pectineus* present no peculiarities, except that the former is a very extensive muscle, and the adductor magnus is entirely fleshy, the femoral artery passing through a muscular canal and not a tendinous one as in the human subject.

The *rectus* has only one tendon of origin. It is inserted into the patella. The latter is not developed in the tendon of the rectus, but rather in the tendon formed by the conjoined vasti and crureus. There is no subcrureus; the arrangement of the extensors of the leg presents no other peculiarities.

The *semimembranosus* arises from the ischial tuberosity by a flat tendon half an inch wide. It is inserted into a depression on the inner surface of the tibia, immediately below the tuberosity, passing behind the internal lateral ligament. Its tendon of insertion is about a quarter of an inch long, the rest of the muscle being fleshy.

The *semitendinosus* arises by two portions—one from the transverse processes of the third and fourth caudal vertebræ by a continuous tendinous process, and the other from the tuber ischii. These two heads unite about an inch and a quarter below their origin, forming a large muscle which is inserted into the middle of the inner surface of the shaft of the tibia. From the caudal origin, opposite its point of junction with the ischial factor, a long slender muscle is given off, which courses along the outer and posterior border of the gluteus maximus muscle as far as the lower end of the femur, into which it is inserted immediately above the external condyle. This is a very peculiar muscle; I have only once met with the homologue of this slip in the human subject, a moderately muscular female *æt.* nineteen. It had not, however, the disposition as described in the Kinkajou. It arose from the long factor of the biceps femoris, and joined the semitendinosus immediately above the internal femoral condyle.

The *biceps femoris* arises by two heads—one, the ischial, by a pointed tendon from the tuberosity, the other from the transverse process of the second caudal vertebra, immediately anterior to the caudal factor of the semitendinosus. The former constitutes a broad, expanded muscle, increasing in width as it passes downwards. It terminates in a broad, expanded tendon, which is inserted into the head of the fibula and into the fascia of the leg to the extent of an inch and a quarter below this point; the latter, or caudal factor of the biceps, runs parallel with the preceding, and terminates along with its lower fibres in the fascia of the leg, reaching as low down as within an inch of the ankle-joint.

There are no special peculiarities in the quadratus femoris, obturatores externus and internus, and gemelli. They present the same attachments and disposition as the corresponding muscles in man.

The *gluteus maximus* is a large, broad, and somewhat extensive muscle. It arises from the upper and posterior aspect of the iliac crest, from the sacral aponeurosis which covers the sacro-caudal muscles, and from the transverse processes of the third and fourth caudal vertebræ. It is inserted into the posterior aspect of the shaft of the femur, occupying fully its middle three-eighths. Its upper fibres only are tendinous at their insertion.

The *gluteus medius* arises from the upper two-thirds of the dorsal surface of the ilium, from the aponeurosis of the gluteus maximus, and also that separating it from the sacro-caudal muscles; it is more or less continuous with the pyriformis muscle, and inserted along with it into the great trochanter of the femur.

The *gluteus minimus* preserves its usual arrangement; the gemelli and obturator internus muscles seem to be differentiations from it.

The *tensor fasciæ femoris* is a fusiform muscle. It arises from the ilium (below the sartorius) by a pointed tendon; the muscle is about an inch and a quarter long, and terminates in the fascia of the thigh.

The capsular ligament of the hip-joint is very strong; the ligamentum teres only moderately so.

The *gastrocnemius* has a sesamoid bone developed on its outer head; it presents no decidedly interesting peculiarities.

The *soleus* is a single-headed muscle. It arises from the head of the fibula, and from the peroneal intermuscular septum. It is inserted into the os calcis along with the preceding.

The *plantaris* is a very large muscle. It arises from the outer femoral condyle, and is also attached to the sesamoid bone belonging to the outer head of the gastrocnemius. It terminates in a strong tendon which traverses the inner aspect of the os calcis, and, becoming expanded in the sole of the foot, forms the plantar fascia. It is closely associated in the sole of the foot with the flexor brevis digitorum.

In the Caracal, Dog, and *Paradoxurus* this muscle is not so large. In other respects it does not materially differ from that of the Kinkajou.

The *popliteus* muscle is very large and fleshy. The anterior tibial artery passes above its upper instead of below its lower border as in the human subject. Occasionally, however, this peculiar mode of distribution of the artery is met with in man; I met with one instance of it during the last winter session.

The *abductor minimi digiti* is aborted at the sixth metatarsal base, constituting Wood's abductor ossis metatarsi quinti.

The *flexor brevis digitorum pedis* is distributed only to the second, third, and fourth digits; each tendon, prior to its splitting for the passage of the perforans, is joined by a fleshy slip from the accessorius, given off from the latter opposite the point of junction of the long flexors with the accessorius. The perforatus tendon of the fifth digit is derived from a distinct wedge-shaped muscle, which springs from the fibular aspect of the conjoined long flexor tendon, simulating a lumbrical muscle. It terminates in a long slender tendon, which splits to allow of the passage of the perforans tendon, and is inserted into the sides of the base of the fifth metatarsal second phalanx.

The *flexor longus pollicis* is mainly distributed to the third, fourth, and fifth digits. It is, however, intimately blended with the tendon of the flexor longus digitorum; the latter is mainly distributed to the first, second, and third digits. Both flex all the digits. The lumbricals are four in number, and are disposed as in man.

The *abductor hallucis* arises from the scaphoid bone by a pointed tendon, and fleshy from a sesamoid bone situated below the entocuneiform bone. It is inserted fleshy into the tibial side of the base of the first hallux phalanx and its sesamoid bone.

The *flexor accessorius* is a large monogastric muscle. It arises from the outer side of the os calcis. It is implanted into the conjoined tendon of the flexor longus hallucis et digitorum, and prolonged as three fleshy slips to the tendons of the flexor brevis digitorum as already mentioned.

The *flexor brevis hallucis* arises from the entocuneiform bone and the sheath of the peronæus longus. It is inserted into the sesamoid bone on the fibular side of the hallux metatarso-phalangeal joint.

The *flexor brevis minimi digiti* is comparatively large and fleshy. It arises from the sesamoid bone covering the base of the fifth metatarsal bone. It is inserted into the fibular side of the base of the first phalanx of the fifth digit. It has a sesamoid bone developed in its tendon of insertion.

Obliquus tarsi. This is a small muscle, conoid in shape, which arises from the depression between the prominent tubercle of the internal cuneiform on the inside, and the scaphoid and external cuneiform bones on the outside. It also receives a few fibres of origin from the tendon of the tibialis posticus. It is inserted into the tibial side of the base of the hallux metatarsal bone. I have ventured to give the above name to this muscle; so far as I am aware (I may be mistaken) it has not been previously described. I found it also in the *Paradoxurus typus*. When I dissected the Caracal, I did not notice this muscle, although I have no doubt it will be found in that animal also.

The *tibialis anticus* has its usual origin. It is inserted into the base of the hallux metatarsal. In the *Paradoxurus* and Lynx it is inserted into the hallux metatarsal and entocuneiform bones.

The *extensores longus hallucis* and *digitorum* present no special peculiarities.

The *extensor brevis digitorum pedis* is like that in man.

The *tibialis posticus* is inserted into the scaphoid ecto- and entocuneiform bones.

The *peronæus longus* and *brevis* are disposed exactly as in man. There is, however, an additional muscle, the peronæus intermedius or quartus. It arises in conjunction with the peronæus brevis, having a distinct and well-developed muscular belly which terminates in a long, slender tendon, which, having traversed the outer dorsal aspect of the foot, is inserted into the base of the first phalanx of the fifth digit, previously joining the common extensor tendon.

This muscle has the same arrangement in the Dog, Caracal, and *Paradoxurus typus.* It is a muscle not unfrequently found in the human subject—seldom, however, in the complete form above described, but as a tendinous offset from the peronæus brevis, and usually described as the peronæus quinti.

The *interossei* present no essential differences from those described in the manus. The plantar are two in number, and arise from the sheath of the peronæus longus and ectocuneiform bone. The dorsal interossei are six in number, and arranged as in the hand.